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03i. Direct seeded rice and mechanization

NITROGEN DYNAMICS AND DRY MATTER ACCUMULATION IN RICE (ORYZA SATIVA L.)CULTIVARS IN DIFFERENT NITROGEN LEVELS UNDER DIRECT SEEDED AND TRANSPLANTING METHODS

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Purpose:
World wide, water for agriculture is increasingly scarce and limiting the cultivation of the flooded rice crop. Direct seeded rice(DSR) cultivation is an emerging cultivation system Nitrogen fertilization is widely adopted and need to optimize for enhance grain production with improved rice cultivar.

Approach and methods used:
A field experiment was conducted at the farm, UAS, Raichur , India, during *kharif* 2013. Split plot design was adopted to compare the performance of rice cultivars BPT5204, Gangavathi Sona and JKPH3333 to varied nitrogen levels 75%, 100% and 125% of recommended dose of nitrogen (RDN) under direct seeded and transplanted methods. The dry matter and total N content in plant was estimated at the weekly interval during the growth.

Key results:
The data revealed that the mean total N content of transplanted rice ranges from 0.6 % to 4.36 % & in DSR (0.3% to 2.8%) during the growth. Among the varieties, JKPH 3333 recorded maximum total N content (4.3%) both in transplanted (4.3%) and DSR(2,8%) at tillering stage . At harvest also, the maximum total N content was recorded in JKPH3333 in both the methods .At harvest, grain N content was maximum in JKPH 3333 both in transplanted (1.34%) and DSR(1.59%) methods at 125% of RDN application whereas, the lowest was noticed in BPT-5204 under transplanted (0.92%) and DSR(1.45%) .Whereas, at 100% of RDN Gangavathi Sona recorded the highest grain N of 1.49% in DSR. Application of 125% of RDN recorded significantly higher production of total dry matter (TDM) in all cultivars under both the situations of sowing. Under transplanted method, cultivar JKPH 3333 recorded maximum TDM of 76.80 g/ hill followed by Gangavathi Sona(73.0 g/hill) at 125% of RDN .

Synthesis and Applications:
The course of total nitrogen accumulation was significantly higher in transplanted method. The rate of N acquisition in rice plant declined with age of the plant. This ensures the demand of N during the panicle development. At harvest, grain nitrogen content was more in DSR compare to the transplanted method. The results suggested that varieties under transplanted condition had a better response to nitrogen application and higher partitioning efficiency leading to greater production of grain yield.